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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,093	04/06/2001	Arnaud Gueguen	205748US2	6734

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ALEXANDRIA, VA 22314

EXAMINER

ABRAHAM, ESAW T

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 02/06/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

8

**Office Action Summary**

Application No.

09/827,093

Applicant(s)

GUEGUEN ET AL.

Examiner

Esaw T Abraham

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04/06/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims **1 to 31** are presented for examination.

#### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No: 0005682 (France) filed on 05/03/2000.

#### ***Information Disclosure Statement***

3. The examiner has been considered the references listed in the information disclosure statement submitted on 04/09/02 (see attached PTO-1449).

#### ***Drawings***

4. The drawings are objected to under 37 CFR 1.83(a) because the components or steps of the drawings are not labeled as described in the specification.  
  
For example: Figure 7 is not labeled to show the "second switch" (72) as described in the specification (see the applicant's specification page 10, line 5). A proposed drawing correction or corrected drawings to describe or designate with or as if with a label are required in reply to the Office action to avoid abandonment of the application.

#### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

*Arrangement of the Specification*

5. As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

6. The abstract of the disclosure is objected to because:

- a) Please re-arrange or backward the words to fill the gaps or spaces. (see in lines 3 and 5 of the abstract).
- b) Please remove the word or phrase --Fig. 7-- from the abstract sheet.

Correction is required.

*Claim Objections*

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7. Claims 9, 10, 12-14, 16-18, 24 and 26 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only--, and --- cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1-8, 11, 15, 19-23, 25 and 27-31, are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (U.S. PN: 6,233,709) in view of Rasky et al. (U.S. PN: 5,278,871).

As per claim 1, Zhang et al. substantially teach or disclose turbo coding, and associated iterative decoding methods to utilize for the higher speed data transmission of the system (see

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col. 1, lines 15-25 and col. 2, lines 47-64) and referring to figure 1, Zhang et al. teach an iterative decoder (100) comprises a decision circuitry (118), decoder circuitry (134) wherein the decoder circuitry includes first and second constituent decoders (104, 108), interleavers (106, 108) and de-interleavers (114, 110). Further, Zhang et al. in figure 2 at step 204, teach that a data frame received from an input data of figure 1, (see element 122) to and processed in decoder circuitry (see element 134) for iterations so that each data frame is processed through the correct number of decoding iterations and at step 206, a hard decision is made in decision circuitry of figure 1 (see element 118) on the decoding output of de-interleaver (see element 114) after decoding iterations and further the decision circuitry determines whether a CRC check (error detection) for the current data frame indicates a CRC error and generates a decision (see col. 4, lines 23-53). Zhang et al. **do not explicitly** teach the decoding process is re-encoded or combine initial values to obtain modified values. **However**, Raskey et al. teach a method for generating and modifying a first signal weighting parameter with a received encoded signal, and decoding the modified received encoded signal to produce a first decoded signal, re-encoding the first decoded signal to produce a re-encoded signal, generating a second signal weighting parameter related to said re-encoded signal and further modifying a stored replica of the received encoded signal with said second generated signal weighting parameter; and decoding the modified stored replica of the received encoded signal to produce a second decoded signal (see abstract, col. 3, lines 17-57 and claims 1, 2). **Therefore**, it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to implement the teachings of Zhang et al. to include the process of re-encoding the decoded information as taught by Raskey et al. **This modification** would have been obvious because a person having

ordinary skill in the art would have been motivated in order to enhance the reliability of the decoding process and the overall system performance.

As per claim **2**, Zhang et al. in view of Raskey et al. teach all the subject matter claimed in claim 1 including Zhang et al. teach decoding operation Nmin (minimum number of iterations) and Nmax (maximum number) iterations and the iterations are repeated until the data frame has been correctly decoded or until the number of iterations is equal to Nmax (see col. 2, lines 14-33).

As per claim **3**, Zhang et al. in view of Raskey et al. teach all the subject matter claimed in claims 1 and 2 including Raskey et al. in figure 3 teach outputs from block 300 and 306 are combined in combine block (303) to yield a second signal weighting parameter which has essentially modified a stored replica of received signal (101) then the output from combine block (303) is a modified received signal (309) which is then re-decoded to produce a second decoded signal having additional information about data contained within signal (101) (see col. 7, lines 50-57).

As per claims **4 and 5**, Zhang et al. in view of Raskey et al. teach all the subject matter claimed in claims 1 and 2 including Zhang et al. teach decoding operation Nmin (minimum number of iterations) and Nmax (maximum number) iterations and the iterations are repeated until the data frame has been correctly decoded or until the number of iterations is equal to Nmax (see col. 2, lines 14-33). Further, Raskey et al. in figure 3 teach outputs from block 300 and 306 are combined in combine block (303) to yield a second signal weighting parameter which has essentially modified a stored replica of received signal (101) then the output from combine block (303) is a modified received signal (309) which is then re-decoded to produce a

second decoded signal having additional information about data contained within signal (101) (see col. 7, lines 50-57).

As per claims **6-8**, Zhang et al. in view of Raskey et al. teach all the subject matter claimed in claims 1 including Zhang et al. teach decoding operation Nmin (minimum number of iterations) and Nmax (maximum number) iterations and the iterations are repeated until the data frame has been correctly decoded or until the number of iterations is equal to Nmax (see col. 2, lines 14-33). Further, Zhang et al. in figure 2 step 206 teach hard decision and CRC check (error detection) and information is connected to step 208 to add CRC checks (error detection) or not. Furthermore, Raskey et al. in figure 3 teach outputs from block 300 and 306 are combined in combine block (303) to yield a second signal weighting parameter which has essentially modified a stored replica of received signal (101) then the output from combine block (303) is a modified received signal (309) which is then re-decoded to produce a second decoded signal having additional information about data contained within signal (101) (see col. 7, lines 50-57).

As per claims **11 and 15**, Zhang et al. in view of Raskey et al. teach all the subject matter claimed in claims 1 and 7 including Zhang et al. in figure 1 teach an iterative decoder comprising first and second constituent decoders (elementary decoders) in parallel associated with interleavers.

As per claims **19-23**, Zhang et al. in view of Raskey et al. teach all the subject matter claimed in claims 1 and 6 including Zhang et al. in figure 1 teach an iterative decoder comprising first and second constituent decoders (elementary decoders) in parallel associated with interleavers. Further, Zhang et al. in figure 2 step 206 teach hard decision and CRC check



(error detection) and information is connected to step 208 to add CRC checks (error detection) if the information detect an error.

As per claims **25 and 27-31**, Zhang et al. in view of Raskey et al. teach all the subject matter claimed in claim 1 including Zhang et al. teach an iterative decoder performs decoding on a coded information signed based on minimum or maximum values for the number of decoding iterations to be performed (abstract and col. 2, lines 14-33). Zhang et al. in figure 2 step 206 teach hard decision and CRC check (error detection) and information is connected to step 208 to add CRC checks (error detection) or not. Further, Raskey et al. in figure 3 teach outputs from block 300 and 306 are combined in combine block (303) to yield a second signal weighting parameter which has essentially modified a stored replica of received signal (101) then the output from combine block (303) is a modified received signal (309) which is then re-decoded to produce a second decoded signal having additional information about data contained within signal (101) (see col. 7, lines 50-57). Furthermore, Raskey et al. teach a maximum likelihood decoder attempts to find the value of  $s$ , where  $s$  is some sequence, for which the probability density function of the vector is largest and the maximum likelihood decoder declares that was the transmitted message and since the probability density function of the vector  $r$  is a function of both the channel gain and the noise variance, it is apparent that an accurate estimate of both the channel gain and the noise variance is required if valid soft-decision information is to be determined (see col. 1, lines 36-50).

### *Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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US PN: 5,321,705 Gould et al.

US PN: 6,298,084 Vinggaard et al.

US PN: 6,292,918 Sindhushayana et al.

US PN: 5,936,972 Meidan et al.


US PN: 6,499,128 Gerlach et al.

US PN: 5,721,745 Hlakik et al.

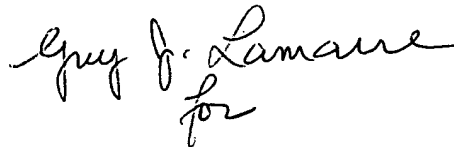
10. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Esaw Abraham whose telephone number is (703) 305-7743. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are successful, the examiner's supervisor, Albert DeCady can be reached on (703) 305-9595. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

  
Esaw Abraham

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Albert DeCady  
Primary Examiner